

Mandumadhanggana	I	75.	Purianagumarrina	V	6.
Manggurduthurli- indigupundarrii	II	3.	Purindjilaurra	II	7.
Manukurunggana	I	31.	Purlunngarrina	I	43.
Marapigurina	VI	5.	Purnujidjanguna	I	24.
Mardamurrunggana	I	44.	Talajindjina	I	54.
Mardangunna	I	38.	Thalangurbana	I	10.
Mardangunna	I	50.	Thardirrina	I	69.
Mardapurina	I	11.	Thordawurdarana	I	71.
Marduwarritjagana	I	22.	Tjarririkabuna	I	34.
Marluwanarra	IV	5.	Tjibilana	I	73.
Marnina	I	67.	Tjiburrkurndina	II	8.
Marnda Pandarranjba	VI	6.	Tjimarkurndina	I	42.
Marnda Thalungan	V	4.	Tjindarwarrindana	II	4.
Marrakumbarrina	I	47.	Tjubili=Jubilee	II	1.
Maruna	I	46.	Wadjabi	I	14.
Mirdanurna	I	60.	Wadjukana	I	74.
Mirdawaridna	I	32.	Wagamarritjaguna	I	61.
Mudjurina	IV	5.	Wammalana	VI	4.
Mulangajinna	I	5.	Wanarrangu	III	1.
Mundhapurgana	II	6.	Warnangarii	II	9.
Murduga	III	8.	Warnawirndurana	I	52.
Murrubarina	I	66.	Warndiwagarina	I	13.
Murrumurnduna	III	3.	Wiridinjingkurndina	I	78.
Muudhuna	I	16.	Wirrinjungu	IV	3.
Naalbakadjina	III	5.	Wurndurraanuna	I	3.
Ngaburnguruna	I	35.	Wuruna	I	70.

FURTHER EVIDENCE OF THE MANUFACTURE AND USE OF GROUND-EDGED AXES IN SOUTH WESTERN AUSTRALIA

By K. AKERMAN, B.Se. (Anthropology)

Until 1958 it was generally understood that the ground edged axe was an exotic element in the lithic artifact assemblages of South-Western Australia. Ride (1958: 162-179) however refutes the argument that all such artifacts had been introduced by trade. Seven out of twelve axeheads examined by him are concluded to have been manufactured locally.

In this paper I will examine seven more artifacts or fragments of artifacts that will reinforce Ride's belief that at some stage ground edged implements were made and used locally. It must be stressed however, that due to the lack of ethnographic evidence it is possible that these artifacts are either a product of an earlier industry contemporaneous with the South-Western microlithic faecies or are experimental implements being produced at the time of contact. With the introduction of iron and steel implements, this edge ground industry would have been nipped in the bud whilst in the experimental stages.

Following Ride's basic grouping based on histories or characters of the artifacts described (Ride, 1958: 165), I will group the following specimens according to provenance.

GROUP I

This first group contains three specimens, two of which were found on Walyunga and one at the South Bullsbrook site. (For a basic description of the localities and artefact types found see W. H. Butler, 1958, and K. Akerman, 1969, 1971).

The first artefact in this group has been previously described (Akerman, 1969: 15), but for the purposes of this paper further elaboration is necessary. Found on Walyunga it is a carefully flaked tabular piece of indurated shale. The overall appearance of this piece would suggest a Kimberley origin—the material however is indigenous. In many respects this artefact bears a remarkable resemblance to the specimen W.A.M.

12206* described by Ride as a Kodja stone (1958: 171). Both bear light edge grinding. However I feel that Ride's specimen has been *accidentally* rather than deliberately fractured and that in comparing the two pieces it seems that the original aim of the craftsman was to produce a biface coroid edge-ground axe head similar to the artifact described in this paper. That both are extremely similar not only in mode of manufacture but are fashioned from the same material and found on the same site raises the possibility of both being originally made by the same craftsman. (Fig. 1a).

There can be no doubt about the nature of the second specimen from Walyunga. It is a large, biface-coroid of irregular section. There is extensive grinding on both checks and the broad angled cutting edge is well preserved. This blade appears to have been fashioned from dolerite, which can be obtained either from intrusions or from water worn boulders throughout the South-West. However the extensive grinding and "finish" of the artifact suggest that it is probably a trade item possibly from the Kimberleys. (Fig. 1b).

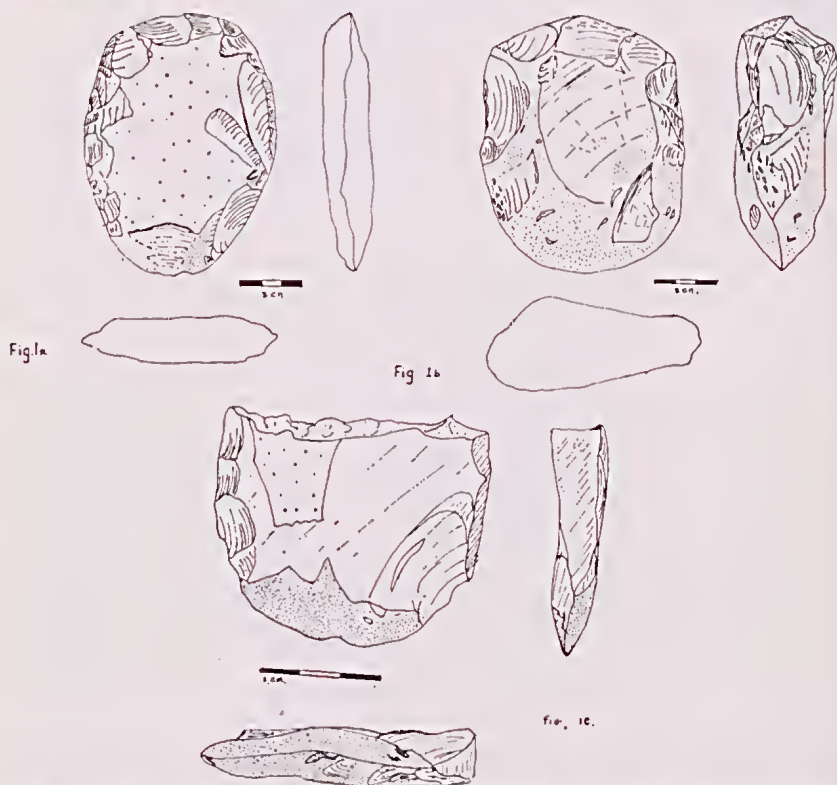


Fig. 1.—The artifacts of Group I: 1a Bifacially worked axehead with light edgegrinding. Walyunga. 1b Well finished axe. Walyunga. 1c Fractured axe. East Bullsbrook.

The final specimen in group I was collected on the South Bullsbrook site in 1970 by Dr. J. Glover of the Department of Geology, University of W.A. Fashioned on a thin tabular piece of dolerite, this artifact has a well ground although sinuous cutting edge. The blade appears to be extremely thin in proportion to its width. It is however fractured across the longitudinal axis.

* Catalogue number of W.A. Museum.

It is this fracture that is perhaps the most interesting feature of the artifact. It occurs at a distance back from the ground edge that would allow a suitable proportion of the blade to be embedded in mastie and hafted "Kodj fashion". Whether this fracture is intentional or accidental cannot be deduced, but when seen in the terms of the proportions of length to width and depth the present artifact is most suitable for hafting as a "Kodj". (Fig. 1c). There is however no ethnographic evidence that "Kodj" stones were this sophisticated. In a specimen of any greater length the thinness would have been a liability and the artifact would lack the structural strength that allows it to stand up to heavy battering and would snap. It must be remembered however that there is a possibility that indeed this is what has happened.

If the artifact had been broken in this manner then it would appear to have been of an experimental nature, for a skilled craftsman who had an understanding of the requirements for the production of an efficient implement is hardly likely to have made this mistake. It appears, therefore, that we have here an attempt to produce an efficient ground-edged implement an attempt that failed possibly because of the craftsman's inexperience, in such an industry that produced an artifact that was structurally capable of withstanding heavy blows as well as providing a reasonably controlled cutting edge.

GROUP II

Group II contains two specimens. The first also fractured at right angles to the longitudinal axis was found at Lynford Hill farm, Kojonup, by D. S. Hack in 1950. Other artifacts collected at the same time from what appears to be a camp site include mullers of the Kulki type and core implements.

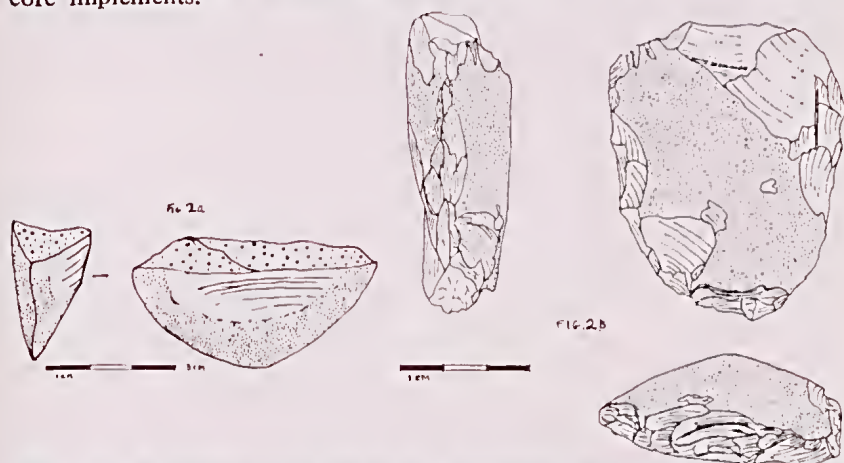


Fig. 2.—The artifacts of Group II: 2a Fractured axehead from "Lynford Hill" farm, Kojonup. 2b Battered axehead from "Kiriwina" farm, Mt. Barker.

This axe-head is represented by the immediate cutting edge. Grinding extends back to the fracture which appears to have been caused by heat, possibly in a scrub fire. The piece at hand appears to be quite old and has developed a thick patina. (fig. 2a).

The second axe head was collected on "Kiriwina" farm, Mount Barker, in the early 1930's by the Rev. S. B. Fellows. The exact locality has not been recorded although it is known to have been found near a swamp with anvil stones and mullers. Made of greywacke this small piece has a much battered "working edge" and appears to have seen considerable use as a hammerstone. Grinding has been carried out extensively on one cheek, eradicating many of the original flaking scars, the other cheek however is only lightly ground. The overall appearance and the

directions of the striations produced by grinding suggest that this was definitely an axe head originally rather than an aberrant form of grindstone (fig. 2b).

GROUP III

The smallest but probably the most convincing evidence for not only the existence but utilization of ground edged implements is found in two small flakes collected in the Lake Hope area in early 1970. The flakes were found in conjunction with backed blades, microliths, worked teck-tite, small coroid scrapers, tula and burren adze slugs and bondi points.

Both flakes bear intersecting ground faeces, and appear to have been struck from the edge of a ground-edged implement. From the slightly differing nature of the original rock that each flake is made and the fact that the flakes were not found in close proximity to each other it is suggested that they were struck from two different ground-edge axes.

Apart from the two flakes under discussion and one muller all other artifacts and waste material was of a siliceous nature — quartzites, cherts, sileretes and meteoric glass. The two flakes and the muller are of basic rock probably dolerite.

Due to the extreme regional metamorphosis in this area the basic rocks have become schistose in character and are unsuitable for axe or grindstone manufacture. It is likely therefore that originally the artifacts from which the flakes were struck were introduced items.

The question to be asked however is how and why were the flakes removed from the original axe? There can be no doubt that removal was intentional, present are the basic characteristics of a deliberately struck flake utilizing one ground cheek as a striking platform. When these features are examined the possibility of flaking occurring while using the axe head as a hammerstone, or whilst in use can be discounted. (fig. 3).

The basic reasons for the flaking therefore are probably: (1) That the implement was being retrimmed prior to regrinding of a fresh edge. Such

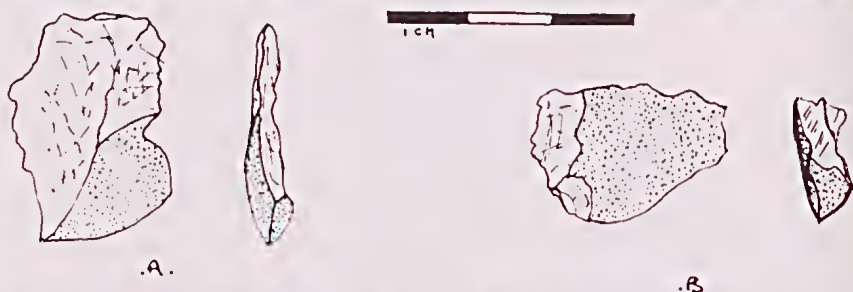


Fig. 3.—Artifacts of Group III: 3a and 6i Axe trimming flakes. Lake Hope.

flakes are common where the edge ground axe was a standard tool. Or (2) That the flakes were removed during the conversion of an edge ground axe into a uniaxially trimmed chopping tool. This tool made on blocks, flakes and pebbles appears to be a standard feature of south western prehistoric surface sites.

The first possibility implies that the people inhabiting the Lake Hope area were fully aware of the manufacture, use and *maintenance* of the edge ground axe. From their position on the extreme fringe of the South West they could have acted as agents in the introduction of such implements into the areas further west. The second point holds no such relationship existing between the population and the original axe head, but implies that the craftsman had attempted to fit an exotie item into the existing tool kit.

Regardless of the reasons for the initial flaking it is obvious that the ground edge axe was present and served a definite function in this area.

CONCLUSIONS

With these descriptions specific evidence of edge ground axes in the South-West includes some nineteen specimens. This number can be raised to twenty if one includes the re-evaluation of W.A.M. 12206 (Ride, 1958: 171).

To interpret the data available at Walyunga is not easy although apart from the one possibly imported specimen (Group 1b), the other artifacts when seen in conjunction with Ride's work suggests there is an increasing possibility that axe manufacture existed in a most basic form. This is further reinforced by the Bullsbrook specimen. The implications raised by the Lake Hope specimens have already been discussed, and it seems clear that the axes were either used as such or seen as "raw material" for the production of flaked edge chopping tools. At Kojonup and Mount Barker heavily worn specimens suggest again that the implements were used for mundane secular purposes rather than being exotic articles of "magico-religious" significance.

With the ever increasing accumulation of data it will be in time shown I feel that a ground edge industry was present in the South-West of Western Australia. The high proportion of aberrant axe forms and "experimental" specimens suggest that the industry was being introduced along with axe heads from northern and north-eastern areas. Possibly the introduction of manufacturing techniques needed to maintain this industry coincided with the European settlement of the south-west. The introduction of iron and steel implements, it seems, both replaced the indigenous kodj and extinguished the ground edged axe industry in its infancy.

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For permission to examine specimens in their care, I am indebted to Mrs. M. Walker, Mr. D. S. Haek and Dr. John Glover. In identification of the rock types used for the manufacture of the artifacts I was greatly assisted by Mr. Corey Williams, Ph.D. post graduate student, University of Western Australia.

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MOLLUSCS FROM ARCHAEOLOGICAL EXCAVATIONS AT MIRIWUN ROCK SHELTER, ORD RIVER VALLEY, WESTERN AUSTRALIA.

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SUMMARY

Aquatic and terrestrial mollusc shells of at least 12 species have been recovered from archaeological excavations in the Ord River valley. Four of these species are thought to have been used for food by Aboriginal man.

INTRODUCTION

The Miriwun rock shelter is located on a ridge overlooking what was, until late 1971, the eastern bank of the Ord River, some 20 km upstream from the main dam site. With the completion of the dam in that year and the eventual filling of the reservoir known as Lake Argyle, the ridge at Miriwun is expected to become an island and the rock shelter may be inundated from time to time. The position of Miriwun rock shelter